

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. An implantable device for attracting circulating cells or foreign substances

5 comprising:

a frame,

attachment means for maintaining the frame in a localized position in a body vessel, and

10 at least one attractant on the frame,

wherein the attractant is capable of attracting a diseased cell or a foreign substance.

2. An implantable device of claim 1, wherein the frame comprises a member for receiving the attractant.

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3. An implantable device of claim 2, wherein the member forms a physical barrier between a cell lining a fluid vessel and the attractant.

4. An implantable device according to any one of claims 1 to 3, wherein the 20 frame comprises magnetic components.

5. An implantable device according to any one of claims 1 to 4 further including one or more of:

a) an endothelial cell;

25 b) an agonist equivalent of an endothelial cell,

c) a host cell,

d) an organ cell,

e) osseous tissue

f) a biotherapeutic, or

30 g) a chemical,

wherein an environment suitable for cell or foreign substance proliferation is created.

6. An implantable device according to any one of claims 1 to 5, wherein the device or a portion of the device is shaped and/or coated to mimic the physiology of 35 body organs.

7. An implantable device according to any one of claims 1 to 6, wherein the device or a portion of the device has been modified to enhance its visibility to imaging systems including ultrasound, MRI, X-ray and CT systems.

5 8. An implantable device according to any one of claims 1 to 7, wherein the attractant comprises one or more of:

- a) a chemokine protein,
- b) a viral host cell receptor proteins,
- c) an agonist chemical for stimulating physiological activity at a cell receptor,
- d) a chemokine agonist,
- e) a bacterial toxin,
- f) a foreign chemical substance, and
- g) a combination of any one of (a) to (f).

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9. An implantable device according to claim 8, wherein the attractant is in combination with a protective substance for protecting the attractant and for extending release.

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10. An implantable device according to claim 9, wherein the protective substance is a polymer.

11. An implantable device according to claim 8, wherein the attractant includes a magnetic component.

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12. An implantable device according to claim 11, wherein the attractant includes a ferrous particle.

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13. An implantable device according to any one of claims 1 to 12, further including containment means for containing and dispensing the attractant.

14. An implantable device according to claim 13, further including means for replenishing attractant.

35 15. An implantable device according to claim 13, wherein the containment means is activated to dispense attractant upon activation by an external energy source.

16. An implantable device according to claim 15, wherein the external energy source is ultrasonic energy.

5 17. An implantable device according to any one of claims 1 to 16 further including a therapeutic agent.

18. An implantable device according to claim 17 wherein the therapeutic agent is a chemical.

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19. An implantable device according to claim 18 wherein the chemical is a medicament.

15 20. An implantable device according to claim 18 wherein the chemical is a chemotherapeutic medicament.

21. An implantable device according to claim 17 wherein the therapeutic agent is an ionizing radiation source.

20 22. An implantable device according to claim 17 wherein the therapeutic agent comprises mechanical means.

25 23. An implantable device according to claim 22 wherein the mechanical means comprises a cantilevered beam activatable vibrationally upon application of ultrasound at a resonant frequency.

24. An implantable device according to claim 22 wherein the mechanical means includes an external energy source.

30 25. An implantable device according to claim 24 wherein the energy source comprises ultrasound, magnetism, or electricity.

26. An implantable device according to claim 17 wherein the therapeutic agent comprises means for stimulating an immunological response.

27. An implantable device according to claim 26 wherein the means for stimulating an immunological response comprises an effective amount of an antigen, an interferon, an chemokine, a lymphokine, or a foreign substance.

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28. An implantable device according to any one of claims 17 to 27, wherein the therapeutic agent includes a magnetic component.

10 29. An implantable device according to claim 28, wherein the therapeutic agent includes a ferrous particle.

30. An implantable device according to any one of claims 17 to 29, further including containment means for containing and dispensing the therapeutic agent.

15 31. An implantable device according to claim 30, further including means for replenishing the therapeutic agent.

20 32. An implantable device according to claim 30, wherein the containment means is activated to dispense therapeutic agent upon activation by an external energy source.

33. An implantable device according to claim 32, wherein the external energy source is ultrasonic energy.

25 34. The use of an implantable device according to any one of claims 1 to 33 as a cellular attractant.

35. The use of an implantable device according to any one of claims 1 to 33 as a viral attractant.

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36. The use of an implantable device according to any one of claims 1 to 33 in the treatment of cancer.

37. A method of using of an implantable device, comprising:

removing a quantity of white blood cells from a body;  
providing systemic chemotherapy treatment to the body;  
deploying a device according to any one of claim 26 or 27, within the body for  
capturing circulating diseased cells;

5       reintroducing the removed quantity of white blood cells into the body  
proximate to the device for use in degrading the captured circulating diseased cells.

38.    An implantable device for attracting circulating cells or foreign substances  
comprising:

10      a frame,  
attachment means for maintaining the frame in a localized position in a body  
vessel,  
at least one attractant on the frame, and  
at least one therapeutic agent on the frame,  
15      wherein the attractant is capable of attracting a diseased cell or virus and wherein the  
therapeutic agent is capable of degrading the diseased cell or virus.

39.    The implantable device according to claim 38, wherein the frame includes a  
magnetic component.

20      40.    The implantable device according to any one of claims 38 and 39, wherein the  
attractant is a chemokine.

25      41.    The implantable device according to any one of claims 38 and 39, wherein the  
attractant is a chemokine agonist.

42.    The implantable device according to any one of claims 38 to 41, wherein the  
attractant includes a magnetic component.

30      43.    The implantable device according to any one of claims 38 to 42, wherein the  
therapeutic agent is a chemotherapy medicament.

44.    The implantable device according to any one of claims 38 to 43, wherein the  
therapeutic agent includes a magnetic component.

45. A method of attracting circulating cells and foreign substances, comprising:  
deploying in a body vessel an implantable device for attracting circulating  
cells and foreign substances, the device comprises: a frame and attachment means for  
maintaining the frame in a localized position in the body vessel, and

5 providing at least one attractant proximate to the frame, wherein the attractant  
is capable of attracting a diseased cell or foreign substance.

46. A method of claim 45, further comprising binding the attractant to the frame.

10 47. A method of any one of claim 45 or 46, further comprising providing at least  
one therapeutic agent proximate to the frame, wherein the therapeutic agent is capable  
of degrading a diseased cell or foreign substance.

15 48. A method of claim 47, further comprising binding the therapeutic agent to the  
frame.

49. A method of any one of claim 45 or 46, further comprising applying at least  
one therapeutic agent proximate to the frame, wherein the therapeutic agent is capable  
of degrading a diseased cell or foreign substance.

20 50. A method of claim 49, wherein the therapeutic agent is applied by locally  
injected.

25 51. A method of claim 49, wherein the therapeutic agent is an ionizing radiation  
source and is directed to a location proximate to the frame.

52. An implantable device according to claim 49 wherein the therapeutic agent  
includes an external energy source and is directed to a location proximate to the  
frame.

30 53. An implantable device according to claim 52 wherein the external energy  
source is ultrasound.

54. An implantable device according to claim 52 wherein the external energy source is a magnetic source.

55. An implantable device according to claim 52 wherein the external energy source is an electrical source.